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EDITORIAL



THE FEDERAL COUNCILLOR

The dawn of April, 1953, heralds the approach of yet another Federal Convention and brings to the fore questions relative to "the Federal Councillor," his duties and value to the Institute.

Federal Executive, by virtue of regular correspondence, keeps your Federal Councillor fully informed regarding developments in the relationship of the Institute's activities to those of other Societies and Government Departments. The Federal Councillor then assumes the responsibility of keeping the members of his Division abreast of the news by reporting at General Meetings, Council Meetings and Divisional Conventions.

The Federal Councillor is responsible for conveying to Federal Council through Federal Executive the wishes of his Divisional Council and members, in order that a vote of Federal Council may be taken on any matter whatsoever during the course of the year.

The Federal Councillor is the guardian of Federal Policy and as such must be on the alert to see that any action contemplated within his own Division is in accordance with that policy.

Members of the Institute should insist that a full report of Federal activity be given at every General Meeting, and show interest in Federal affairs by the attention given to the Federal Councillor. Furthermore, members should submit to the Federal Councillors matters which, as individuals, they consider warrant Federal action. The conscientious Federal Councillor will submit these matters to his Divisional Council without delay. The Council, in its wisdom, will decide whether the matter is suitable for forwarding to Federal Executive for action; if not, it will convey to the member concerned its decision and give him an acceptable explanation.

Remember! Your Federal Councillor can obtain immediately the vote of Federal Council on any matter throughout the year; therefore only matters of such high policy as to merit personal debate need be placed on an agenda for a Federal Convention.

Get to know your Federal Councillor better—give him work to do—request information at every opportunity—in other words, let him enjoy the status his position merits—let him earn his spurs.

FEDERAL EXECUTIVE

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Carrier Control With Self-Biased Clamp Tube Modulator*

One of the current mobile modulation schemes is the circuit shown in Fig. 1. Whatever the original idea behind the use of the selenium rectifier, a check of the system shows that its effect is to provide a means of obtaining a certain amount of carrier control. As pointed out previously,[†] carrier control increases the permissible peak input to the modulated amplifier without exceeding either the capacity of the power supply or the modulated amplifier's rated dissipation, as averaged over a period of voice transmission, by reducing the duty cycle. The rectifier provides the modulator with a d.c. bias that varies with the average of the audio input level. As the audio level increases, the bias on the modulator likewise increases. This reduces the modulator plate current and thus the voltage drop through the modulator plate resistor, R2. This allows the average or d.c. voltage of the screen of the r.f. amplifier to rise, and so the carrier level rises.

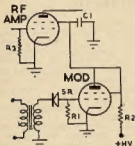


Fig. 1—Controlled-carrier circuit for clamp tube modulation. A selenium rectifier is used in the grid circuit of the modulator tube. R1 in this instance is 7 megohm. R2 is the modulator plate load resistor. C1 and R3 are the usual r.f. amplifier screen by-pass and grid leak, respectively.

The circuit of Fig. 1 was set up using a pair of 8AQ5s and a suitable driver for the r.f. amplifier. The r.f. amplifier was adjusted and loaded to show satisfactory linearity by checking the trapezoid pattern on a 'scope. With essentially sinewave audio input and the level set just below the point where the positive or upward peaks of modulation started to flatten noticeably, the envelope pattern of Fig. 2 was obtained. (Flattening of these peaks occurs in this instance when the negative peaks of the audio signal have sufficient amplitude to cut off modulator plate current.)

Under these conditions, and with a supply voltage of 500, the r.f. amplifier cathode current was about 45 Ma. With no modulation, this current dropped to 22 Ma. However, no matter what the audio level, the pattern showed the same flattening on the negative or downward modulation peaks. This might be expected, of course. With the selenium rectifier in the circuit, the audio at the grid of the modulator is limited

Various opinions are held by Amateurs on the virtues of Clamp Tube Modulation and, as is usual, some are for and some against.

Those of us who have run into difficulty may have done so due to insufficient knowledge of the factors involved, or due to improper adjustment.

To cover the subject fully we are reprinting an article from "QST" Technical Topics and following with the description of a Mobile Modulator by G. M. Bowen (VK5XU).

essentially to the negative half of the audio cycle, the positive half being virtually eliminated by the rectifier.

At this juncture, it might be well to point out that a great deal of confusion seems to exist in the minds of some in interpreting a 'scope pattern of the type shown in Fig. 2. Such a pattern is described as showing "great peaks of audio rising out of the carrier" which seems to indicate that, in some mysterious way, an unusual amount of sideband power is being generated. Even though all laws of modulation are against it, this idea seems to be confirmed by the way a load lamp (or the antenna current) flashes up when modulation is applied. Perhaps this misconception arises from a hasty comparison with the pattern obtained with a constant-carrier system of the conventional type, such as a properly adjusted clamp tube rig. Such a pattern is shown in Fig. 3. In the latter case, the observer first sees a pattern of the plain carrier before modulation is applied. Therefore, when modulation is applied, it is easy to compare the amplitude of the positive modulation peaks with the carrier level. With controlled carrier, the observer sees a relatively narrow band on the screen before modulation is applied. The mistake no doubt occurs when the same sort of comparison is made between modulated and unmodulated patterns. The fact that the carrier level must increase when modulation is applied in a carrier control system is forgotten or ignored. Just as the carrier is no longer visible in the pattern of Fig. 3, just so the carrier level can no longer be seen in Fig. 2. The part of the pattern labelled A in Fig. 2 corresponds to the similarly labelled part of Fig. 3. The fact that Fig. 2 shows flattening at this point, instead of being nicely rounded in sinewave fashion, as in Fig. 3, merely in-

Fig. 2—Modulation pattern obtained with the circuit of Fig. 1 with sinewave audio input. The result of clipping of the positive half of the audio cycle by the selenium rectifier is shown by the flat peaks of modulation in the negative direction.



dicates serious audio distortion. And the fact that A is narrower in Fig. 3 than in Fig. 2 indicates that modulation in the negative direction actually is considerably less in Fig. 2 than in Fig. 3. Without analysing the pattern and determining the true carrier level with modulation, it is impossible to know the percentage of modulation in the positive or upward direction.



Fig. 3.—Oscilloscope pattern of a properly-adjusted clamp tube rig with about 75% modulation. Comparison with Fig. 2 will give an idea of the distortion represented in the latter.

The approximate carrier level can be determined experimentally with the aid of a 'scope and receiver S meter. First, take an S meter reading while the signal is being modulated. Then remove modulation and, without disturbing the coupling to the 'scope, increase the input to the r.f. amplifier until the same S meter reading is obtained. The height of the pattern of this unmodulated carrier will then be the effective height of the carrier level on the original pattern. Input to the amplifier can be raised by increasing the supply voltage, or preferably by inserting a resistor between the modulator cathode and ground and adjusting its value until the desired S meter reading is obtained. In either case, care should be used not to operate the amplifier under this condition longer than is necessary to make the check, since the input will be above normal rating.[‡]

Fig. 4 shows the pattern of a conventional constant-carrier system modulated by the same audio signal which modulated the controlled-carrier signal that produced Fig. 2. The dashed line shows the level of the carrier before modulation. It will be seen that the two patterns are identical. With the same input in both cases, the same S meter readings were obtained, showing that both carrier levels were the same. Also, readings of the audio output from the receiver were taken and these two were exactly the same, proving that the sideband powers were equal. An analysis of these two patterns (Figs. 2 and 4) shows upward modulation of about 80 per cent, and downward modulation of only about 55 per cent. Disregarding distortion, it is quite apparent that the circuit as shown in Fig. 1 is not a particularly effective one from the viewpoint of "talk power."

As has been pointed out previously,[§] a high percentage of modulation with screen modulation cannot be expected unless the modulator can swing the screen voltage to zero or beyond into the negative region. This can be done only by the use of a proper transformer

*The carrier level can also be determined graphically by drawing a line through the envelope pattern, parallel to the horizontal axis, and at such a height that the area in the light peaks above the line equals the area in the dark valleys below the line.

†Technical Topics, "Clamp Tube Modulation," "QST," March, 1930, p.46.

*Reprinted from "QST," November, 1932.

†Technical Topics, "Screen Modulation with Limited Carrier Control," "QST," April, 1931, p.64.



Fig. 4. — 'Scope pattern of a conventional constant carrier system modulated by the same audio signal generated by the circuit of Fig. 1. The dashed line shows the level of the carrier before applying modulation.

between the modulator plate and the r.f. amplifier screen, or by inserting an additional resistor with audio by-pass between the modulator plate and the screen, as shown in Fig. 5. The condenser, C1, tends to hold the d.c. voltage drop across the resistor, R1, constant. Therefore, if the voltage drop across this resistor is made sufficient, the screen voltage may drop to zero or even fall to a potential negative in respect to its cathode when the modulator plate voltage is at its lowest point.

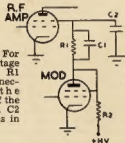


Fig. 5. — For high percentage modulation, R1 and C1 are necessary in the screen lead of the r.f. amplifier. C2 and R2 are as in Fig. 1.

For instance, if the voltage drop across the screen resistor is 100 volts when the modulator plate voltage is 300, then the screen voltage will be $300 - 100 = 200$ volts. Therefore, if the voltage drop across the screen resistor remains the same and the modulator voltage drops to 75 volts, the resulting screen voltage will be $75 - 100 = -25$ volts.



Fig. 6. — Pattern obtained with the circuit of Fig. 1 by adding screen resistor and condenser as shown in Fig. 5. The increase in percentage of downward modulation will be evident by comparing this pattern with the one of Fig. 2.

Fig. 6 shows very clearly the improvement in downward modulation that accompanied this change in circuit. It also serves to make it more obvious that the band at the centre of the pattern cannot be interpreted as representing the carrier under modulation. With 100 per cent. downward modulation, this band would be reduced to a line. The dashed line in Fig. 6 again shows the approximate carrier level. Downward modulation has been increased to about 83 per cent.—just about the limit for screen modulation with good linearity. However, because of the audio wave-shape supplied to the modulator grid circuit through the selenium rectifier, this percentage of modulation in the negative direction cannot be reached without producing more than 100 per

cent. modulation in the upward direction. Over-modulation in the positive direction can be tolerated so long as the r.f. amplifier operation remains linear. In Fig. 6, upward modulation is about 112 per cent.

Fig. 7 shows the pattern obtained with an increase in the audio level. The serious flattening on the positive peaks is the result of driving the modulator grid so far negative that the modulator's plate current is cut off so that the r.f. amplifier screen voltage can no longer rise. Incidentally, this is quite apt to be the adjustment that one would reach by adjusting for maximum kick-up of output under modulation. Experience in this series of tests demonstrates once more the virtual impossibility of proper adjustment of a screen-modulated amplifier without the aid of a 'scope.

Fig. 7. — Pattern obtained from the circuit of Fig. 1 with the additions of Fig. 5 and with the audio level increased to where the positive modulation peaks are clipped when the modulator plate current cuts off.



In pursuing the subject further, the question comes up of why the selenium rectifier should be necessary. The modulator tube in this instance is not provided with fixed bias but, with the insertion of a blocking condenser, as shown in Fig. 8, it should operate as a grid-leak-biased amplifier. Operating in this manner the average bias would ride up and down with the audio level, at a rate depending on the time constant of the condenser and grid resistor. Furthermore, the maximum bias developed should approach the peak value of the maximum amplitude of the applied audio signal. Therefore, if the time constant is made long enough, a bias sufficient for essentially Class A operation of the modulator should be held over from one maximum peak to the next.

Fig. 8.—The substitution of a grid blocking condenser, C1, for the selenium rectifier in the circuit of Fig. 1 reduces distortion without impairing carrier control operation.



On the other hand, it is desirable to make the time constant as short as possible while still approaching the Class A condition, because a short time constant reduces the duty cycle and a great peak input can be used, as mentioned previously. The best time constant is one that allows the carrier to vary at approximately a syllabic rate. A time constant of about 0.25 second has been found to be about right. The values used were a 0.25 uF. condenser and 1 megohm grid resistor.

In practice, the results do not agree completely with the theory. The reason for this is that the theory holds true only if the impedance of the audio source is low so that its output voltage does not vary appreciably with the

varying load of the modulator grid circuit. A microphone transformer is not such a source and the positive peaks in this circuit will be clipped almost as badly as they were by the selenium rectifier. However, even in this case, comparative checks have shown that there is a reduction in distortion compared with that of the circuit with the rectifier.

A Mobile Modulator

BY G. M. BOWEN,† VK5XU

Ever since I acquired a Type 3 unit it has been my ambition to include the modulator within the case. Numerous attempts with a 6J5 as a series screen modulator were moderately successful and all the components "fitted" into the few odd spaces, but the modulation was not as good as it should have been, even for portable operation. Having the cathode 125 volts above earth always made me uneasy, and I could never get 100 per cent. modulation with only the mike transformer and tube.

Then recently two events occurred that brightened the horizon. Technical Topics in November, 1952, "QST" gave me a lead on clamp tube controlled carrier using self-bias, and I raised the necessary for an Innoval 6M5 pentode. This tube is the answer to the Ham's prayer. It has such a high slope that it literally runs by itself and the ordinary carbon mike input is sufficient to severely overload it. As a triode it is a first class clamp tube for a 6L6 or any equivalent tube like the 807.

A few hours experimenting with the time constant values of C1 and R1 for the delay time of the carrier and I finished up with C1 0.1 uF. and R1 1 megohm. The screen dropping resistor

(Continued on Page 4)

† 73 Portrush Road, Toorak Gardens, South Aus.



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A MOBILE MODULATOR

(Continued from Page 3)

will need to be adjusted to suit individual requirements, but the value of voltage at the screen should be 100 to 125 volts. In the Type 3 there is a 250 volt screen supply which enables a wire wound resistor to be inserted into the chassis.

SW1 is a single pole double throw toggle which opens the connection to the 6M5 and shorts out the 2,500 ohm screen dropping resistor for tuning purposes or for c.w. operation of the Type 3.

A four-pin miniature speaker plug and socket takes the mike connections, and you will notice that on the circuit shown, the excitation for the mike is taken from the cathode current of the 6L6. On my mike there is a push to talk connection which enables me to open the connection when I push the hand switch. This is a very handy adjunct and enables tuning to be done without having the mike itself closed.

One word of warning. If the mike transformer leads are not connected correctly, the circuit will act as an audio oscillator! Reverse the primary leads to affect a cure.

The Innovol socket solders onto the anode tuning condenser and the tube sits upright between the r.f.c. and the aerial coupling condenser in the Type 3. Remove the cathode by-pass condenser (C23) which carries the earth terminal on the front panel and wrangle the small mike transformer in between the switch bank and the aerial coupling condenser.

The four-pin socket (or a small jack) to take the mike cable can be fitted adjacent to the p.a. grid coils quite easily. The hole from the earth terminal can be enlarged to take the c.w.-phone switch SW1 mentioned previously.

For the Type 3, the tuning procedure is the usual one, but make sure that the clamp tube is not in circuit or you will appear to be tuning for rise of plate current instead of the usual dip. Load the final to the maximum limit as for c.w. operation, then switch in the clamp tube and watch the plate current fall to about half value. Make the usual testing sounds in the speaker and note the rise of plate current to almost full value which is normal for carrier control. Too much audio will cause the 6M5 to cut off and cause bad distortion, so ease up on the level! Only the negative audio peaks can be passed by the tube when this happens and then only if the C1/R1 combination is sufficiently fast.

The idea is to get enough current still flowing in the 6M5 to swing the voltage

B.C. Converter for the S.W. Receiver

BY LES DUNCAN,* VK5AX

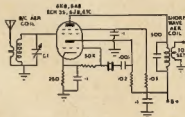
Current interest in crystal controlled converters and a desire to have "music while I work," led the writer to evolve the following novelty one recent wet Sunday afternoon. Most Hams are familiar with the principle of the xtal locked converter by now, so I will not enter into a long technical description. (VK5GL, "A.R.," November, 1952, has covered the ground thoroughly.)

The general idea is to convert a high frequency to a low one within the tuning range of the station receiver. It was reasoned that if this works so well, why not do the opposite—namely convert the broadcast band to a higher frequency and have your favorite serial on the shortwave super?

A quick search through the junk box found a 6050 Kc. crystal, an old pentagrid converter tube and sundry small pieces. Pencil and paper and a few moments of grade VII arithmetic showed that the broadcast band (1,500 to 500 Kc.) would tune from 7,550 to 6350 Kc. on the shortwave, the writer was proving the soundness of the scheme by listening to the local broadcasts at full volume. The thing worked like a charm and is the easiest of projects to get going, no circuits to juggle with for hours and guaranteed to go from the start.

The accompanying circuit should be self explanatory but a few points may be enlarged upon. The aerial coil is an ordinary broadcast aerial coil. If you live in the country, make C1 a variable so that you can peak the circuit on the weaker stations. If you live in the shadow of the big stations, just put a

couple of hundred pF. across the coil and forget it. The output coil was an ordinary shortwave coil from a dual waver, shunted with 500 pF. to get the resonance somewhere near 7 Mc. An r.f. choke in this position would probably do the same job. That is all there is to it. Any xtal will do. Add the frequency to 1,500 Kc. and 500 Kc. and thus determine the tuning range on the receiver dial.



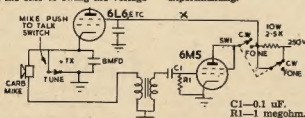
It was not many minutes after the first station appeared on the calculated spot that it was realised the unit had possibilities as a frequency meter. For instance: Broadcast stations are required to maintain their frequency within very close limits and the frequency as read on your receiver dial will be as accurate, plus or minus, as the crystal you use. I may not have phrased that very well but here is an example. 5DN transmits on 970 Kc.; the crystal I use is 6050 Kc., and thus 5DN appears on my dial at 7020 Kc. Catch on? Using a 6150 Kc. rock, which I zero beat to Radio Australia, gives me 5DN at 7120 Kc. plus or minus a few cycles.

Now you take it from there.

* 16-King Street, Gawler, South Australia.

of the screen of the final each side of 125 volts and hence produce the necessary efficiency modulation.

I have not yet tried the idea of inserting a resistor and condenser network between the 6M5 and the 6L6 screen (marked X in circuit) as the "QST" article suggests, but I'll report on that later when I have done some more experimenting.



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A Crystal Controlled Service Oscillator

BY C. A. CULLINAN,* VK7XW

METHOD OF USING OSCILLATOR

In the U.S.A. several crystal manufacturing companies make crystal controlled oscillators for use in service shops for rapid alignment of receivers and as many Amateurs earn their daily crusts in servicing sets, it was felt that a description of a similar device used at this station would be of general interest. Here it is used for alignment of various shortwave receivers.

The main purpose of crystal controlling a service oscillator is to enable the user to have a variety of accurate frequencies available at the touch of a switch. Those who do a lot of receiver alignment know the time that is frequently wasted in changing bands and setting vernier dials to their proper positions. Also those who do only a little of this work know how they get out of practice in setting up an oscillator, so wasting quite a lot of time.

Now a crystal controlled oscillator does two things perfectly. It enables the user to get repeats of the same frequency time after time without the slightest bother, and it saves a lot of time.

100 Kc. crystal can be used but it is more difficult to detect which harmonic is which.

Harmonics of the 200 Kc. crystal are useable up to 30 Mc.

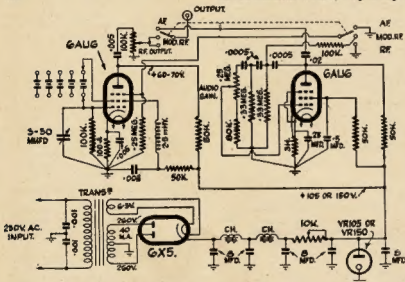
For use with Amateur receivers, a crystal on the edge of 3.5 Mc. is obviously valuable for determining the edges of so many Amateur bands.

In the oscillator at this station the following crystal frequencies are used (fundamentals): 200 Kc., 455 Kc., 1,000 Kc., 3.512 Mc. and 8 Mc.

THE CIRCUIT

Now for some details of the oscillator. A type 6AU6 valve is employed as a Pierce oscillator, suppressor grid modulated by another 6AU6 valve operated as a phase shift audio frequency oscillator. Power is supplied from a small power transformer and 6X5 rectifier.

There are two switches, one to select the desired crystal and the other to select either modulated R.F., unmodulated R.F., or A.F. only. The phase shift A.F. oscillator develops a very pure sine wave at approximately 1000 c.p.s. and in Amateur work is very handy to



Naturally it does have one disadvantage in that its frequencies are fixed, not variable, but this is not the disadvantage it may seem at first.

Here in Australia most receiver manufacturers, as well as coil kit makers, have standardised on 455 Kc. as the I.F. to use and 455 Kc. crystals are fairly easy to get.

Most broadcast band receivers are aligned at 600 Kc. and 1400 Kc. and this is welcome because 200 Kc. crystals are also fairly easy to locate (specially in some American disposals gear). Both 600 Kc. and 1400 Kc. can be covered by harmonics of the 200 Kc. rock. A

supply an audio tone to modulate the rig in place of the usually unreliable whistle. The audio gain control varies the feedback necessary to maintain oscillation. For the best waveform it should be set in the position which just permits reliable oscillation. In its maximum position it will give about 100% modulation of the R.F. oscillator.

Transformer: Primary 240 volts (or to suit), h.t. secondary 260-0-260 volts 40 Ma., filament 6.3 volts at 2 amp. Any suitable transformer can be used with any filter chokes provided the output voltage is between 100 and 150 volts.

Resistors and Condensers: Ordinary tolerance components will be quite satisfactory.

ADJUSTMENT

The 3-30 pF. trimmer from grid to ground on the R.F. oscillator is adjusted to give good output with all crystals. This condenser controls the feedback. If the low frequency crystals will not oscillate with the trimmer at maximum capacity, place a small trimmer across the r.f. choke. In a Pierce oscillator the tank circuit must be tuned well below the crystal frequency and the tank L/C ratio must be high. Usually the stray capacities are sufficient.

Note that in this circuit the crystals are connected between the grid and screen of the 6AU6.

If a gas regulator valve is used, as shown, the adjustable filter resistor is

(Continued on Page 8)

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WHY? ...47!

The Reason for the Oddness of Preferred Values

Reprinted from "Wireless World," Feb., 1932

"Diallist" recently disposed of the impression that when a resistor is marked 47,000 ohms it is necessarily something quite different from a 50,000 ohm resistor. As he pointed out, a usual tolerance is $\pm 10\%$, so the "47,000 ohm" resistor would be within its rights if its actual resistance were anything between 42.3K and 51.7K ohms. For most purposes, then, 47 and 50 are interchangeable.

That being so, why "prefer" 47 to 50? Or 22 to 20, or 68 to 70, or any of the other new-fangled numbers to the easily remembered 10, 25 and 50?

It all arises from the fact that it is impossible to manufacture anything exactly to a given value. There must always be some tolerance, however small. And the cost goes up very steeply as the tolerance is reduced. So it is wasteful to specify a closer tolerance than is really necessary. In ordinary receiver circuits there is rarely anything substantial to be gained by keeping the values of components, except those required for tuning, within closer limits than $\pm 10\%$. In fact, many of them can be allowed a $\pm 20\%$ tolerance,



which means that one marked 50 may be anything from 40 to 60.

In the old days, the main standard values were 10, 25 and 50, with their multiples of ten. Assuming a $\pm 20\%$ tolerance, the allowable spread of each value is shown here in the right-hand column of Table 1.

Nominal Value	Acceptable Values for $\pm 20\%$ Tolerance
10	8-12
25	20-30
50	40-60
100	80-120

TABLE 1.

All is well so far, but what intermediate values would you choose? Even with such a wide tolerance as 20%, there is a large gap between nominal 10 and 25. A likely value would be 15, which would spread from 12 to 18, and so would begin where the nominal 10 left off. But there would still be a gap from 18 to 20. If a standard value of 20 were added, this would spread from 16

to 24, so components that measured between 16 and 24 would be in rather an ambiguous position, since they could be sold as either 15 or 20! Similarly for those between 20 and 24.

So our tidy, sensible round-number scheme is already beginning to look a little less tidy and sensible. It was this that led to the idea of choosing nominal values such that the usual tolerances would include all possible values without any gaps or over-lapping. The problem was to divide the whole scale from 10 to 100, so that each division would represent the same tolerance spread from a nominal value. Obviously if this were done from 10 to 100 the same plan would work for 1 to 10 and 100 to 1,000, and so on, covering every possible value.

Musical readers will see that this is the same kind of problem as what they call equal temperament—the dividing up of the octave into a number of equal intervals corresponding as nearly as possible to the existing musical scales. But, as they know, it is impossible to make equal divisions correspond exactly with the simple ratios required for perfect tuning, and the equal temperament whole tone—corresponding to tolerance in our problem—cannot be exactly the 9:8 ratio that makes a true whole tone. Another similar problem, a little nearer our subject, is the dividing up of the 1:10 ratio, or decade, into the ten equal-ratio parts we call decibels.

Starting off with the widest standard tolerance, $\pm 20\%$, we see from the above table that the top-limit value is in every case $\frac{1}{4}$ times the bottom limit. We want to make the first standard value 10, and, as we have seen, the corresponding limit values are 8 and 12. Multiplying 12 by $\frac{1}{4}$ brings us to 18, which is the top limit of 15. The top limit for the next preferred value would be $\frac{1}{4}$ times 18, which is 27, and the number that 27 is 20% more than is 22.5. That is already beginning to look a little odd.

Proceeding in the same way to the next preferred value, we find it to be 37.75, which is worse. But that is not the worst of the matter because it turns out that we do not arrive, as we had wanted, at 100. It falls between two of the preferred values found in this way. After all, it is rather too much to expect that a sequence based on a previously chosen tolerance would end up exactly on 100. One could, of course, abandon the idea of trying to fit the series exactly into a decade scale, but that would sacrifice the immense advantage of having the same numbers repeating as multiples of ten in both directions without limit.

So it is necessary to begin afresh. The kind of scale on which a given ratio is represented everywhere by the same length is the logarithmic scale, with which slide rules are marked. If we try to divide the 1:10 slide-rule scale into equal lengths representing 1:1.4 we see, as we have already found by calculation, that it does not go exactly. The nearest whole number is six times, and the ratio represented by one-sixth of the whole scale is about 1:1.468, instead of the 1:1.5 we wanted. The corresponding \pm tolerance is just under 19%.

Now, if 47 $\pm 20\%$ is considered rather odd, what would people say about 46.4195 etc. $\pm 18.86\%$ etc., which is the



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sort of thing a mathematically perfect preferred-value system would give! This was considered rather too much to swallow even in the interests of science, so it was decided to accept slight overlapping of some of the divisions in order to retain the standard tolerance figures and also to allow the "perfect" nominal values to be rounded off to not more than two significant figures. The sequence so obtained is 10, 15, 22, 33, 47, and 68; and it starts all over again with 100, as shown in the diagram.

So we see that if, for example, we had a vast stock of resistors of every possible value between 8 and 80, we could sort them out into six piles labelled 10, 15, 22, 33, 47, and 68, without any of them being more than 20% high or low. And 36 piles would provide for every value between 8 ohms and 8 megohms.



So the whole list of preferred values can be set out as shown in Table 2.

There is no attempt to divide the values any finer for the higher grade components having standard tolerances of $\pm 2\%$ or $\pm 1\%$; so if you wanted, say, 80 ohms $\pm 2\%$, it would either have to be ordered as a non-preferred value, which might not be readily obtainable, or searched for out of an 82 ohm wider tolerance batch.

Incidentally, resistors with silver or gold bands in addition to the usual three-band colour code are not, as might be supposed by the uninitiated, of a particularly select kind; their tolerances are 10% and 5% respectively. The more choice 2% and 1% components are distinguished respectively by an uninteresting red or brown. If there is no tolerance colour at all, $\pm 20\%$ must be assumed.

—“CATHODE RAY.”

20%	10%	5%
10	10	10
—	—	11
—	12	12
—	—	13
15	15	15
—	—	16
—	18	18
—	—	20
22	22	22
—	—	24
—	27	27
—	—	30
33	33	33
—	—	36
—	39	39
—	—	43
47	47	47
—	—	51
—	56	56
—	—	62
68	68	68
—	—	75
—	82	82
—	—	91

TABLE 2.

Half the tolerance, $\pm 10\%$, or a 9:11 ratio, is represented by half the distance on the logarithmic scale; so twice as many piles are needed, the new ones being centred on the limit values for the 20% classification. There is no difficulty in deciding on 12 as the first of these additional preferred values, because that is exactly $10 + 20\%$ and $15 - 20\%$, but there might be a difference of opinion about some of the others. As a matter of fact, the correct approach is to begin with the smallest standard tolerance, $\pm 5\%$, and divide the decade into 24 sections. The exact tolerance with no overlapping would then be about $\pm 4.8\%$, but this allows no margin for any rounding off of the nominal centre values. When they have been rounded off to the two-figure numbers that give the smoothest sequence, the $\pm 5\%$ values are 11, 12, 13, 15, 16, 18, 20, 22, 24, 27, 30, 33, 36, 39, 43, 47, 51, 56, 62, 68, 75, 82, and 91. Crossing out every alternate one leaves the $\pm 10\%$ values, 12, 15, 18, 22, 27, 33, 39, 47, 56, 68 and 82; and repeating the process leaves the $\pm 20\%$ values, 15, 22, 33, 47, and 68, as before.

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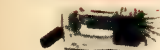
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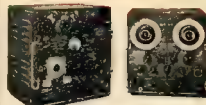
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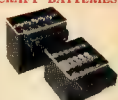


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Single bank, 3 pole, 4 way, 3/6.
Single bank, single pole, 6 way, 3/6.
Two bank, 2 pole, 4 way, 3/6.



FIFTY MEGACYCLES AND ABOVE

Compiled by J. K. RIDGWAY, VK3CR

2 MX OPENS FOR VK3-VK7

The night of the 24th February made up for all the time and work put into the 2 mx skeds by the Launceston gang. At 1820, 7FF heard 3ABA's automatic m.c.w. very weakly. The signal built up to a maximum at 2040 and was out at 2050. As many calls had been given with NQO 3ABA was raised by land-line by 7FF at 2105.

Jim swung his beam again and commenced working 7BQ at 2115, but QSB put the signals in the noise before a QSO could be made. 3CP also heard 7LZ's c.w. at this time. 3RK was then worked by 7FF at 2132 with signals both RST 579. This was followed by QSO with 3RK by 7LZ and 7BQ. 7LZ at 2206 worked 3ABA, followed by 7PF and 7BQ. 7GM came on to work 3RK for his first VK3 QSO. He was followed by 3YS who also worked all VK7s. The VK3s could still be heard at 0055 on the 25th when they QRT. More than one QSO took place between some stations as conditions were good enough for a long rag-chew.

Skeds were arranged for 0645 on the next day. 3RK and 3RK were heard on c.w. at RST 549, but no QSO resulted.

These good conditions were obtained on the trailing edge of a slow moving high pressure. Radio-sonde readings taken at Laverton at 1400 hours shows no temperature inversion, but a layer of dry air between 1,500 and 10,000 ft. with layers of moist air above and below. This could point to a possible duct having been present.

An interesting point noticed was the QSB. When 3ABA's signal went up in strength, 3RK's signal went down. This was also found by the VK3s with the VK7 signals.

We hope that this opening will encourage more VK3 stations to keep the skeds and also to call, leave their carriers on, do anything but only put a signal on the band when conditions look right. As the best time of the year is to come, we can only hope for many more interesting contacts.—7FF.

N.S.W. V.H.F. GROUP

On 14th February some of the V.h.f. Group, N.S.W. Division, took a trip to Newcastle to attend a meeting of the Hunter Branch of the W.I.A. They took with them lecturers and approximately 20 units of v.h.f. gear, from pip squeak tx to 100 watt tx's, rx's, converters, g.d.o.s, super regen's, etc. The chief lecturer was 2AB, Berry Beresford, supported by 2ANF, John Miller, and 2AJX Harry Solomons. We were very grateful to see such a good roll up of Hunter Branch members, 76 in all. Lionel Swain, Chairman and President of the Hunter Branch, turned the meeting over to John Miller, President of the N.S.W. V.h.f. Group, who introduced the lecturers. After the lecture, a vote of thanks was given by John Clarke to N.S.W. Div., supported by 2AGY. We take this opportunity of thanking the Newcastle boys for their conviviality and interest. We also wish to congratulate their President, Mr. Lionel Swain,

on having been awarded the honour of life membership of the N.S.W. Division.

5c. News.—This band has been reasonably active this month, 2JX having contacted 2WH with good signals both ways. 2AH and 2JU have both been heard working with 2GU Canberra with very good signals both ways. 2ANF had QSO cross band 2 and 6 mx with 2GU. The band custodian, 2RU, has been heard frequently in contact with 2ADT and 2AGY. 2VW, 2HE, 2AJR, 2AKK, 2ABC, 2WJ have been on fairly regularly. Once this month 2Ls have broken through, but all around, conditions have been bad in N.S.W.

144 Mc. News.—As usual this band has been active, with many of the distant country stations coming in with good strength. Canberra stations 2GU and 2PM have been R7 in Sydney. 2WH at Forbes is perhaps the most consistent. 2ADT, 2AGY, 2ADS, 2BZ, all of Newcastle area, have been worked at good strength. 2OT has been heard in Sydney S4. We have not heard 2XY for some time. 2ANU, Muswellbrook, has not been heard in Sydney this month. 2AGY says that he is interested in hearing 2GU and 2PM. Fred's frequency is 144.004 Mc., he uses c.w. and phone, and has a really good signal in Sydney. The mobile boys have been out this month, and caused quite a lot of interest. 2ANF/M, the Gladsville Radio Club 2ADY, 2ABO, and 2ATO/M/Walkabout!

On Wednesday 18th, 2ANF/M went out to French's Forest, the Sydney boys had to plot his QTH. A lot of fun was had by all, and some rather funny bearings were given. Stations that participated were 2LZ, 2HO, 2WJ, 2QW, 2HL, 2ABB, 2AJZ, 2LG and 2AQB.

On Sunday 21st Gladsville Radio Club held a sell day of mobile stations who all went to secret locations. The home stations were all invited to join in and plot the whereabouts of each mobile unit. Although the weather was not all to be expected, a very good and interesting day was had by all. Some stations were mobile all the way there and home. Mobile stations participating were 2AOY, 2ABO, 2YE, 2ATO, 2AOA, and 2HL. That night their whereabouts were divulged. Some very accurate bearings were recorded, and by the same token some very funny bearings were also given. This was a treat to the organisers, it was a good effort.

A few of the DX frequencies may be handy. 2GU's frequency is 144 Mc. and 2PM 144.15 Mc., both of Canberra. 2ANU Muswellbrook 144.6 Mc., 2VU Singleton 144.15 Mc., 2TA Young 144.74 Mc., 2AMV Forbes 144.07 Mc., 2NS Bathurst 144.04 Mc. Newcastle boys: 2ADS 144.14, 2BZ 144.126, 2AGY 144.004. A new station on 144 on c.c. is 2ARM, welcome to the band OM.

576 Mc. News.—Now that the DX is out, interest will be turned to the 576 Mc. band. The Newcastle boys have shown interest this month and 2BZ has acquired some gear for this band; this means that other Newcastle boys will become interested. In Sydney, stations equipped for 576 Mc. are 2WJ, 2AJZ, 2HL, 2VL, 2HO, 2JX, 2ABZ, 2AWZ, 2ANF, 2YR, 2XX, 2PU, 2XG and 2VW

Now how about getting on all of you. I have even heard that 2RU is keen. Cess Cronan has to be thanked for the good "ragging" he has put into this 576 Mc. work.—2HO.

VICTORIAN DIV. V.H.F. GROUP

Apparently Amateur Radio telephony is gaining in popularity in U.S.A. Many V.h.f. Amateurs there are making contact by this method of transmission, employing audio frequency shift keying. This must be quite an interesting phase of radio work from both the technical and operational points of view.

The next V.h.f. Group meeting is on the 15th April at 8 p.m. in the Institute's Rooms. If you work on 50 Mc. or above come along and meet your fellow occupants of these bands. Visitors are also welcome.

The February meeting was preceded by a visit to the f.m. station at Jollimont. 18 were present for the inspection. A feature of the station noticeable from over a large area of the city is the mast and aerial. The mast itself is 200 feet high, and on top of this is a 30 ft. four bay turnstile antenna consisting of crossed folded dipoles. At the present time the station functions by relaying ABC programmes, so that none of the ancillary equipment and studios peculiar to the A and B class stations on the medium frequencies exist at the moment. The gear is therefore confined to that necessary to produce the required r.f. power together with the means to provide frequency modulation of the carrier. The input to the final amplifier (a pair of 827R beam tetrodes) is approximately 2 kw. These are preceded by a line-up of frequency multipliers and amplifiers with normal circuitry to the final frequency of 91.1 Mc. The set-up is reactance tube modulated and incorporates frequency stabilisation.

Some 6 mx Interstate openings during the latter part of February have been reported. After returning from overseas. 3NW has recently appeared on 6 mx. We welcome Ken back on the v.h.f. bands.

Once again 2 mx signals have spanned Bass Strait. On the evening of 24th February contacts were made between Launceston and stations in the metropolitan area. Transmitter powers ranged from 30 to 80 watts input to the final. The antennae consisted of the following types: Dipole, Lenfo, 12 and 16 element arrays, 5 over 5. Regarding locations, stations contacted are not much above sea level, while Launceston stations are situated at the Tamar Valley. The distance involved is roughly 270 miles.

It is of interest to note that a continuous test transmission is being maintained by the P.M.G.'s Research Section on a frequency of 160 Mc., the location of the tx being about half way up Mt. Arthur, near Launceston. Signal strength recording apparatus is located at Sandringham, Victoria. Recordable signals have been received on a number of occasions, and unusually high signal peaks were consistently recorded during the period 20th to 24th February. The dc output power is 18 watts and a five element beam is employed at each end. For those interested in comparing the meteorological conditions with the above v.h.f. results, the general nature of the atmosphere at the time (as confirmed by the Weather Bureau), was

characterised by abnormal temperature and humidity gradients caused by the drift of warm dry air over Bass Strait from the mainland, giving rise to super-refraction of the radio waves concerned.

As may be recalled, the first VK3-VK7 QSO on 2 mx was made in March, 1950, by 3AKE, of Geelong, and TTF. Stations coming on later from Burnie provided further contacts with VK3. However, those on the 24th were the first made between Launceston and the Melbourne area. On the same evening, the two active Ballarat v.h.f. Amateurs 3ZL and 3GM were received in Melbourne well above normal sig strengths. These stations reported reception of carriers on the VK7 frequencies.

Look for VK7 2 mx signals at 6.45 a.m. and after 8 p.m. The daily sked with VK2 is at 8.30 p.m. They transmit the first five minutes.

3AFJ of Shepparton, is now putting a stronger signal into the Melbourne area since increasing power with an 829B as the 2 mx final.

288 Mc. fans will be interested to know that Don 3PO, of Ballarat, calls Melbourne every evening at 2000 hours for five minutes, then listens for five minutes through till 2030 hours. 3AAF and 3AFJ also looking for signs of activity on this band. 3AFJ looks for signals from Geelong at 2030 hours till 2045 hours. SWL Gerry Lane at Tunstall has heard 3AFJ at S8 over a distance of six miles.

Members may obtain from the Secretary, contest log sheets which can be adapted for use in the v.h.f. field day contest. Next and final field day is on 28th April.—3ABA.

SOUTH AUSTRALIA

Clem 5GL reports that the various bands have nothing on the wide open spaces of Central Australia. Much trepidation in the land of Colonel Light Gardens as Bill Lloyd is completing a 50 ft. steel tower and an 829 final with 100w. slung in for good measurement on 144 Mc. Bill 5HD of course is famous as the relative of Hughie who has done so much to put VK5 onto the Ross Hull Trophy list.

Mac 5ME probably has the same feelings as myself when he opens his "QST" and sees there the R.C.A. ad. for the 6146 and in another spot "50 Mc and Over" and I quote: "The new 6AJ4 tube is a triode specially designed for fellows who are looking for ways to improve their rx performance." grounded grid r.f. service at 420 Mc." and again, "A companion tube for u.h.f. i.v. mixer use is the 6AM4 . . . the noise figure of xtal converter was improved by 8 db by the addition of the 5842 amplifier, another high-gm triode." Never mind, Mac, we'll try tripling again!

The fish can't be biting too well at Lincoln because there is news that terrific activity on 6 and 2 mx has appeared in the shack of 5VJ and maybe that hop across the Peninsular will soon be made. Wally 5DF is also reported to be delving into the mysteries of the v.h.f. having put 50 c/s. just where they ought to be. 5VJ using a converted AR301.

Jack 5LR has found that 6 and 2 mx beams stay up easier than 10 or 20 mx ones, and has made a come back with crystal controlled tx and rx's. Back in

the post-war era we of the stay-at-home fauna found it convenient to listen and call on the v.h.f. bands between 1830 and 2000 hours each night. It was amazing who popped up wasn't it Max? What about it chaps? Joe 5JO is still listening. Maybe you'd better give a call next time Joe.

Les 5AX still working the city regularly, but Lance, at Clare, probably too busy putting out fires to use the power on 50 Mc. Saw a well known Mt. Gambierite recently heading away from the local "disposals hand-out centre"—I quote that famous saying! Doc 5MD, by the way, uses a ground plane fed with co-ax with an 815 in the final and for reception swears by a 10 ft. piece of Nylax inside the shack and attached to the R.A.A.F. converter.

My one-lunger has not rushed for months, but there are a fair crop of garden rakes around my suburb and on 288 we have Howard 5XA working Rex 5KY over the back fence. Keep it up boys, you'll be down my way soon.

Lorrie 5XN has 5MO's tower and is busy erecting it along with a 20 mx under—under I said—a 288 array. And before I leave you, my fellow strugglers, did you know that 5NL has broken in on 50 Mc. Good going Ron. You know of course that reliable communication can be made regularly over distances of 1,000 miles on 50 Mc. Yes, Sir, the Americans have done it on 49.8 Mc. and using 100 kilowatts. So brethren, jack up that old transformer and ring up the water supply for a 12 inch main. As for me, give me the translator—it only needs a 1½ volt torch cell for crystal control on 144 Mc.—5XU.

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1625—21	200, 230, 240	—	—	2.5v.—10a. (1,000v. insul.)	47/6
1805—22	200, 220, 230, 240	—	—	2.5v.—10a. (3,000v. insul.)	75/-

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	Maximum	At Full Rated D.C.				
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1952 VK-ZL DX Contest Results

With DX conditions in the doldrums, the small number of logs received was to be expected although many VK and ZL stations who participated failed to return logs and the same can be said of many Oceania stations, particularly in regards to the phone division. Much credit is due to those who unselfishly forwarded logs even though their scores were well below that necessary for the award of certificates.

It was decided after the 1951 Test that all competitors should operate for the same 24 hours, with no choice of hours. This feature caused hardship to at least one ZL who lost several "choice" hours when his AC power was cut in his district to conserve power. Electricity is still in short supply in ZL although the position will be OK in 1953.

The top c.w. scores were returned by VK2DG (top VK for the third year running) and by ZL2FA who needs little introduction into DX circles while the phone winners were VK3LN and ZL2GX. A point of interest is the very small difference between the top VK and ZL scores in each division. Top overseas score for c.w. came from W7PGX who used four bands, while overseas phone honours go to VS1EG who used one band. It should be noted that overseas stations used the "country multiplier" method of scoring while VK-ZL stations used the B.E.R.U. awards.

Awards. Certificates were posted to all winners during the first week in February. VK special awards will be announced by W.I.A. Silver mounted plaques for the top ZL scorers go to ZL2FA and ZL2GX.

The 1952 Test was organized by the N.Z.A.R.T. The 1953 Test will be organized by the W.I.A.

C.W. SECTION

Australia						
Call	80	40	20	15	10	Total
VK2DG	—	1096	1274	118	—	2488
VK2GW	45	787	889	173	—	1874
VK2ANN	—	568	1169	45	—	1782
VK5FH	—	737	932	45	—	1714
ZL2AWU	45	264	657	366	—	1332
VK6RU	—	502	573	—	—	1075
VK3HT	—	605	239	117	—	961
VK5KU	—	450	226	—	—	676
ZL2AHA	—	—	401	232	—	633
VK3PL	—	398	222	—	—	620
VK3XB	—	385	189	—	—	574
VK3AAH	—	160	350	—	—	510
VK3CX	—	—	440	—	—	440
VK2RA	89	145	58	118	—	410
VK3ANJ	—	160	234	—	—	394
VK5XK	—	74	304	—	—	378
VK3HL	—	—	367	—	—	367
VK5WO	—	—	84	—	—	84
VK5JZ	—	—	—	—	—	—

New Zealand						
Call	80	40	20	15	10	Total
ZL2FA	—	1117	1405	—	—	2522
ZL1AH	—	843	604	490	30	1967
ZL1MQ	74	44	681	158	29/73	1459
ZL1JA	—	808	569	—	—	1377
ZL2GS	—	528	248	—	—	778
ZL2BJ	—	739	—	—	—	739
ZL3LL	—	557	—	—	—	557
ZL3IA	—	—	—	386	—	386
ZL2MM	—	368	—	—	—	368
ZL1JT	300	—	—	—	—	300
ZL1QW	—	—	202	—	—	202
ZL1QI	—	185	—	—	—	185
ZL2GX	—	—	158	—	—	158
ZL1HY	—	—	—	—	—	—
ZL3CP	—	—	—	—	—	—

PHONE SECTION

Australia				
Call	20	15	10	Total
VK3LN	1203	—	—	1203
VK4KS	723	—	219	942
VK2DG	839	30	—	869
VK6RU	593	—	—	593
VK6DB	516	—	44	560
VK3AUP	503	—	—	503
VK3ATN	492	—	—	492
VK3LC	343	—	—	343
VK6DX	247	—	—	247
VK5CE	182	—	—	182
VK2AHA	102	—	—	102

New Zealand				
Call	20	15	10	Total
ZL2GX	1195	—	—	1195
ZL1MQ	362	15	15	392
ZL1JA	109	—	—	109
ZL1HY	—	—	—	—

LISTENERS' SECTION

Australia	
E. Trebilcock, BERS195	1815
E. Giddings	1204
New Zealand	
L. D. Jones	638
R. W. Gray	591
J. B. Holder	295

OVERSEAS RESULTS

C.W. SECTION	
North America	
W2WZ	288
W2EQS	30
W3LXE	284
W3QOR	12
W4HQN	504
W4KE	12
W5ADZ	2175
W5LFH	784
W5UKL	752
W5OLG	187
W6IBD	1880
W6ATO	1394
W6AM	530
W6WOO	154
W7PCX	4384
W7DL	2134
W7HAD	1090
W7PQE	546
W6NWX	1775
VE7AIIH	175
Europe	
ON4PA	35
F8RM	77
C.W. SECTION	
F8DW	19
OH2MC	28
OHFW	27
OH3OX	24
OH1OW	21
OH2XK	9
OH2VZ	1
HB8CZ	72
PA0VB	108
984AX	23
DL1FF	1000
DL1FE	284
DL1XF	234
DL3BK	14
DL1YA	4
OZ7PH	161
OZ5LN	32
G4CP	481
G6BS	390
G8XN	140
GWSSL	100
G14RY	30
SM7QY	284
SM5CO	180

Oceania	
SM5LL	145
SM5AQV	75
SM7AVA	52
SM3AKM	48
SM5WJ	36
SM7YO	35
SM5ANY	32
South Africa	
ZS1H	28
South America	
CESAG	741
KH8ARA	1909
KH8AHD	1604
YU1AB	986
Asia	
VS8CG	1547
VS6AE	480
KA9AA	333
KA2KW	192
JA1AF	136
JA3AB	18

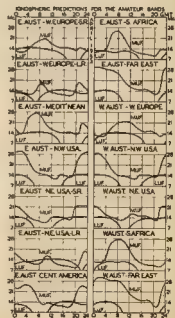
PHONE SECTION

North America	
SM7YO	2
OK1MB	230
F8FT	35
G8XN	3
South America	
PY2AHS	4
Europe	
PI1J	203
PA0NU	112
PA0BRG	66
OZ7SM	40
SM5ACC	304
Asia	
VS1EG	464
VS1EV	264
KR8CA	98
KATSL	184

LISTENERS' SECTION

Austria	
OE403	576
OE196	230
OE491	144
OE499	126
OE325	105
England	
OE181	50
OE150	32
OE475	15
Czechoslovakia	
OK2-10603	53
OK1-8515	8
OK1-8921	8
Sweden	
BS15822	403
J. Burgess	192
Japan	
SM5-2591	180

PREDICTION CHART FOR APR. 1953



FEDERAL, WSL, and DIVISIONAL NOTES

FEDERAL

R.A.G.B. CORONATION RELAY

During the years 1930 to 1939 an important feature of the Amateur Radio within the British Empire was the Annual Loyal Relay. Over this time His Royal Highness, the Prince of Wales, R.G. (later H.R.H. the Duke of Windsor), was Patron of the Radio Society of Great Britain, when, annually in June each year, Amateurs originated messages conveying Loyal birthday greetings to the then Royal Patron of the Society. The messages were relayed by R.G.'s Headquarters via Amateur Radio channels where they were collected and taken to York House, London, on the morning of His Royal Highness's birthday.

This year 1953, the Council of the R.A.G.B. has notified all Empire Societies that it has decided to organise a Coronation Relay—the first of its kind ever attempted—during which the National and local societies throughout the British Commonwealth are invited to send messages of loyal congratulations to Her Majesty Queen Elizabeth on that day. Each R.A.G.B. headquarters a few days before her Coronation on 2nd June.

It is suggested that messages should originate from the President or Chairman of the appropriate Society and should include the names of the organisation and the call signs of all the stations participating in the message.

Mr. H. A. Bartlett, G4QA, Council Member and Coronation Relay Organizer, has requested the support of all Empire Amateurs. To give this the message it deserves. Mr. Bartlett, in his letter to W.I.A., has pointed out the interesting historic fact that only two or three of the United Kingdom Amateurs appeared to organise the first Loyal Relay in June, 1930, are still alive. They are Mr. Fred W. Miles, G6ML, and Mr. L. Howard Thomas, G4QA.

BEWARE OF BERYLLIUM POISONING!

A timely warning to Amateurs appears in "Radio 25" (official organ of the South African Radio League), January 1953, edition. It concerns a harmful poisoning of human tissues that can be brought about by an accidental contact with the common compound containing beryllium used to coat the inside surface of the ordinary fluorescent lighting tubes.

Many Amateurs use these tubes as r.f. indicators—although they are rated for 340 volts and are charged—with great success, little knowing probably that they are playing with a rather dangerous "gadgets". Should the tube be broken, the surface of the skin cut or scratched by a piece of the broken glass, beryllium powder can find its way into the tissues giving rise to indolent ulcers which apparently resist all attempts to effect a cure; cases have been known where the only successful treatment has necessitated wide surgical excision.

Take heed lest an accident occur with dire consequences to you or yours! Should a tube become broken, handle it with care, handle the fragments, and with rubber or leather gloves remove the pieces and bury them deep enough in the ground to avoid them ever being dug up again. If children are about, greater caution still should be exercised. The safest way would be not to have any of these tubes in the house, especially installed in a lighting fixture!

ANNUAL FEDERAL DINNER

The Annual Federal Dinner of the Wireless Institute of Australia will take place at the Federal Hotel, Collins Street, Melbourne, on Easter Saturday night, 4th April, commencing at 8 p.m. when it is expected Delegates from each VK Division representatives of the Postmaster-General's Department and the Wireless Broadcasting Board, and other Officers and representatives of the three Services will be in attendance.

FEDERAL QSL BUREAU

RAT JONES, VK2JJ, MANAGER

Latest advices indicate that Felix Franchette, VK2G, ex-VK2JJ, who has been working for a long time in his homeland, will leave for a further term of service in New Caledonia on 28th April.

A rat patty card especially designed and stencilled for the 1953 VK-2L DXK Contest is that from WVAZD. The cards are striking, attractive, and well executed in coloured, frosted ink.

More hitherto unpublished QTTs by courtesy of Treb. BR8196 KMAAH/XBS is now KBAYV. Fred Carpenter, call C.A. from Canada, has VSTDH back in G and operating at GEPF pending issue of own call VSWAB also back in G after sojourn with R.A.F. at Salsau, Oman. Will soon be heard under G0GUY. G2VS now gives QTH as Box 126 Sandakan, Br Nth. Borneo. VIACX, ex-FMT, Paul Boucher, BP5FT, still in China, reported to be returning to France shortly.

Regret notes this month as writer has been on holidays and now cleaning up the mail accumulation during period at Frankston. Renewed acquaintance with Doug 3FH, Bill 3JE, and the squire of Parkdale, who has risen up the social scale by adding philately to his other hobbies. Helps him to while away his time while stillably listening for the rare ones. Writer also has a day road his tour to Sydney, but due to a pulled monkey muscle in calf and an abscess on the lower jaw (savours of foot and mouth disease) and a last minute attempt to buy Kinross, plans to meet several Sydney Hams and a trip to Bathurst went astray. Will all concerned accept regrets and apologies. However, did meet old friend, evergreen Jim Corbin, 2YC, the ubiquitous VK3I QSL Manager who never looked better or in such good fighting trim. Should think he will gain a power in the land with his unbounded energy and enthusiasm for the Ham game.

NEW SOUTH WALES

The February meeting of the N.S.W. Division was held at Science House on the 37th with the President, John Moyle, at the helm. An attendance of about 100 members passed quickly through the usual business and the principal item of interest which was a lecture on the design of Receiving Valves by Messrs. Ron Tremlett, Kevin M. Johnson, and J. H. Bourn, of Philips.

The lecture was originally delivered at the I.R.E. Convention held in Sydney last year and was 1953, edition of a lecture which was reproduced at excellent quality on the President's reproduction unit. The recording was presented on the tape on the construction and manufacture of receiving valves taken at Philips' works. At the conclusion of the film at 9 p.m., Mr. Tremlett answered questions on the film for some minutes and then the tape was put on. The lecture was illustrated by lantern slides which were skilfully handled by our Treasurer, Stan Owen, and lasted till about 10 p.m. Mr. Tremlett and Mr. Johnson then answered a barrage of questions in a manner very interesting that those who would have been there past midnight had not a forcible hall been called. The lecturers were enthusiastically applauded for a very fine effort.

Nominations were then called for the position of Federal Councillor for the ensuing year and the voting was between John Moyle (31U) and Jim Corbin (37U). Mr. Moyle, however, having declined nomination, Jim won the vote on a show of hands and congratulations are extended to him. Mr. Wilson was elected as second in nomination as above and at the coming Federal Convention and was elected unopposed.

COALFIELDS AND LAKES ZONE

IANU has departed for a rest by the seaside, complete with portable gear for 40 and 50. 2YU has just returned from a similar expedition and now has a large programme of modifications mapped out. 2YL is again active and is picking up some nice ones on 30. 2FZ is still searching for the ideal rx, but is resting the tx. 2ADT booked up some gear on 37 Mc, but has no results to report so far. 3RU very busy with house renovations which have curtailed his activities.

ACCURATE FREQUENCY TRANSMISSION RESULTS

Thursday, 26th February, 1953

7000 Kc.	12 cycles low
7020 Kc.	— 80 — low
7040 Kc.	— 18 — high
7060 Kc.	— 50 — high
7080 Kc.	— 456 — low
7100 Kc.	— 20 — high
7120 Kc.	— 5 — high
7140 Kc.	— No Check
7150 Kc.	— No Check

Ham activity VKR appeared on 40 after a long absence. JAEZ, now in a new location in Queensland, has been active. Nothing has been heard of 3GA or 3EH, but 3ARV still keeps active on 40.

NORTH COAST AND TABLELANDS

The next big event on the North Coast is the Urunga Convention. No doubt you've all heard or read from time to time of the good time to be had at these gatherings and yet are any who just can't make up their mind whether to come or not, then consider your arrival at Urunga as a matter of good times and fellowship and I'm sure you will have no doubt as to what you should do.

A welcome guest to Abe 2TQ who is now stationed at Bellington hasn't lost any of his getting on 40 and 30. Good signals have been heard from 2XU, 30L, 2YC, and 2XO on 80 m, whilst 2AHH had the fortune to wear a few on 40 m, plus the same band. Cries 2XO had a pleasant trip to Sydney and returned with a new utility ready for his own use. Whilst Pete 3FA intends to spend some time at Williamstown with the R.A.A.F. Active Reserve, Len 1LR, of Kyogle, will soon have a long honing in on 40 m. 2XU was welcomed by Mrs. John 2AMV has been holidaying at Scott's Head once again and puts out a nice signal with the portable.

As was agreed at the North Coast and quite a few North Coast boys were on their toes should they be needed. Although Kempsey only had three feet of water in the low part of the season, quite a few land boys were out of order—a condition which could prove serious for any town. It is hoped in the near future that the N.S.W.G. will conduct a periodic testing with the Police Department, because it is some time too late to tell when the flood has become its damming. An early arrival of the completion will be welcomed by all here on the North Coast.

To finish on a more joyful note, tune up that portable gear and join us at our Easter Convention at Urunga.

HUNTER BRANCH

As already reported in the "Bulletin," the February meeting, at which a lecture demonstration was given by the V.H.I. Group from Sydney, was attended by a large number of members and visitors. This was very gratifying, both to the V.H.I. boys who brought their gear all the way from the "Big Smoke," and to the Hunter Branch members who were present for this grand night. We were pleased to see among those present Phil 2TX, who made the trip from Woyah, and Geoff 3WU, who represented the boys in that area. Divisional Council honoured us by the presence of Secretary Dave 3EO and Bill 3CL.

The Hunter boys are preparing for annual pilgrimage to the North Coast Convention at Newcastle, and hope to bring back many prizes. The gang will be led by 2AHA and Harold has purchased a car to eat the family and gear. It is hoped that the gang will be a good one. Ideal for portable contests and finds hidden lair by instinct! Secretary 2BF is also taking the family and Varley will likewise continue with another holiday. The gang will be doing marine fishing and portable operation using Type 3 Tx and Rx. Also on annual leave will be 2XN, who will be back in the near future. 2XU as far as Urunga! 3KQ is going again and Ken warming up portable tx by working 2XO on 40 and 30, taking his "Beeper" for 144 hunts. Hope to win the trophy for 1953. Trophy for the Hunter Branch is Associate, Syd Daniels, who will look-keep for 2A2A in contest. Len 3JH and 2XU will be doing marine fishing and portable operation using Type 3 Tx and Rx. 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From Maitland we hear that the "39 Mc Gentlemen," joining 8GQ, are thinking of shifting QTR to "Coastal City." Keith ZDG has not completed re-orientation of antennae poles to suit new shack. We've got a shock when 3AKP puts sig on air again! Among the first to QSO Ws when they came on 40 mc phone was Jim Z2C. Frank ZPK got in early for the T.V.I. Rookery and enthusiastically told the gang about it. It seems Harry 2APX will lose his independence later this year! ZPF taking things easy on the re-build. 2AKG gone back into his shell. Pleased to report Ben 2OS hopes to be active again shortly; feeling much better lately. JADS smiles following v.h.f. gossip! Doug himself made v.h.f. history in Newcastle when he QSOed 2BX on 378 Mc with Earl Cee Cronin brought up for the V.H.F. Group demonstration. Fred 2AGY had stiffie with drive for the 144 tx, but puts out whopper sig from the 2 element beam on 8 mc. Max 3OT working cross-band 8 and 2 mc and doing some local mobile on 40.

It's news when 2BX goes portable; Dave is holidaying at Port Stephens using 2ARA's RA19 transceiver. EKY working a little DX on 40 and 20 mc c.w. ZWP also shares DX and making changes in TA12C tank circuit. 3CN been more active, Ben only 1000 watts. 3CN must be hatching something. 2MR had some trouble with the Philips No 4 rx. At Stockton, 2H busy beat building but has an occasional QSO on 80. 2AMX's NVL been ill; hope Betty OK again now Bill. A local 2C station has acquired land near 2AAI for possible v.l. tx—hope Ron Lakeland 3KQ and 2AFA, quiet lately. As this will be my swan song, I'd like to express my gratitude to those who have assisted me in various ways. Finally, an appeal to you chaps to let the Zone Officer know what's doing so he won't have to be a super Sherlock Holmes and Watson! 73 from 2A5J.

Notice of Meeting—A special lecture is being arranged for the April meeting which will be held at the 3TR Auditorium at Maitland on Friday 19th. Cars will leave usual Newcastle meeting place, Hunter Street West, at 7.15 p.m.

VICTORIA

The March meeting of the Division was held on 4/8/53 when approximately 120 members assembled to participate in a tender night. General business was quickly dealt with, leaving most of the evening available for listening.

Gear available ranged from jars of odd screws to tv's on rz.

3JN, O.C. Tenders, kept things moving along at a merry pace, but still managed to raise plenty of laughs. Unfortunately the evening was not long enough to dispose of all the gear offered, and private sales were arranged after lock-out time.

3ARV must have taken a taxi home, as he acquired enough bits and pieces for a major re-build. Another successful tenderer was 3OO's junior op. Just as well Zede brought the station wagon along.

Our visitor, 3JD, was asked about the tender nights held in S.A. He explained that they took part of the proceeds for their funds and it appears possible that similar steps will be taken here in future. I would like to see such proceeds ear-marked for the building fund, which has just been established.

The building fund has got away to a good start, but will have to be greatly increased before positive action can be taken to acquire our own premises.

It was announced at this meeting that arrangements have now been made to resume slow wave transmissions every Sunday evening. The station supplying the service will appreciate reports on the transmissions. If you cannot contact them direct, reports may be sent to the room in Alton Street. Please pass this information along to your a.w.l. friends.

The 50 and 144 Mc. transmissions of the Sunday morning broadcasts are now transmitted simultaneously with the 7 and 3.5 Mc. transmissions. Reports should be sent direct to 3WL.

Don't know where everybody went during the long week-end, but heard very few signals on the air. 3ATW was on testing portable gear ready for Easter holidays. 3AAP playing with an inverted V, but have had no report about it yet. 3BH talking of putting a signal on 288. 3ATR trying Heising modulation, but doesn't sound the best Max. 3AMZ shifted to Moorsbin Saw 3AFD's photo in evening paper recently. Fitted out with new uniform ready to take his place in the Coronation Continent. If he was any taller he'd need guy wires. I'd give you further 73s had to send the editor parcels of butter, eggs, etc. (and potatoes—Ed.), so till next month, cheers chaps.

NORTH EASTERN ZONE CONVENTION

Yes men, by kind favour of the editor we have the latest oil from the Annual Convention

of the North Eastern Zone, held in the Avenue Public Hall (1876) on 8th March when Jack 3PT was elected President for the ensuing year, Rex 3UR Vice-President, and Hugh 3AIF Secretary. The Zone Correspondent was left to Andy 3TD, while the Communications was handed again to the capable operators, Col 3WQ and Ken 3EG. The Zone Emergency Co-ordinator is Henry 3HP.

We will not deal with the individuals this time, but we would have liked to have seen, for example, John 3ACX, Howard 3VY, Alan 3AT, Tom 3TS, Les 3ALE, Chas 3ACW and Associate Jim Harrington. The trip around the D.C.A. installation at Mangalore was most interesting going over the crani-directional v.h.f. range, the 75 Mc. marker on the Lorens range the D.M.E. equipment and the communications installation. All wound up with an excellent cup of tea in the passenger's lounge by Mrs. D. R. Twigg, and her friends. Congrats in closing to Alan 3BQ, Doug 3LZ, and Chas 3ACW on an extra good show.

CENTRAL WESTERN ZONE

In the absence of Trev 3ATR, now holidaying in VKA, lucky blighter, your worthy scribes for this month are the Lubeck lads—3IB and 3AKW. Once again activity in this zone has been rather quiet with a lot of the boys just getting over their holidays.

3IB designed a super-cooper combination 3 and 8 mc tx with v.l.c. and a.c. but ran out of the necessary spoolsticks on his holidays; looks like back to the old mod. osc. and super blooper! 3AKW running around in a spanking new car, how do you do it Bill! Might try and touch you for a loan and get that new tx finished yet!

Merv 3AFO seems to be about the only progressive member of the zone, having all his 3 mc gear in operation, but nobody to talk to! Merv is planning to move up a few rungs in the old ladder and is shortly sitting for his first class ticket, good luck to you anyway fella. Jim 3DP playing around with a 3 mc converter, new car, four finger code, etc. you might get a contact out of him. Bob 3ARM still awaiting the arrival of his alternator, look out for the kilowatts when he gets it operating fellows.

Visitors to the "best broadcasting station . . ."—with apologies to a certain VKS—recently were 3ARB and 8GQ. Had to lock and chain the

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5328 for the occasion. DX conditions seem to have deteriorated during the last month and the local DX hounds, HER and HAROLD 3AK, have been finding things pretty lean. Have been drowning our sorrows in the local hotelery!

In conclusion, we extend a hearty invitation to all some members to be present on our Wednesday night hook-ups at 8.30 p.m. Not just the regulars, but everyone, that means you! Don't look at me like that Bill! Seriously fellows, a low powered 80 mhz rig is not hard to construct and we do like to keep in touch with you all. You'll be there? Y.b. then, be seeing you.

FAR NORTH WESTERN ZONE

After many attempts to get some notes in on time I have at last managed to get around to pounding the old "mill" and hope these are in time for inclusion in April issue. The main item of interest here at the moment is the 2 mhz activity by Chas 3TI. Called on Chas a few weeks ago and he was surrounded by Lecker wires, self excited oscillators and super regen rx, to say nothing about the antenna systems. He has really been stuck into it and now has graduated to a m.o.s.a. on two. So far he hasn't been heard by anyone, but has hopes of working Ian at the Mildura drone in the very near future. 3GZ has made a 4 element beam for two and has the CR322 rx section on the table pondering over the oscillator section which someone has been tempering with. He would be grateful if anyone would supply him with the values of cathode coil and condenser, in fact all the dope on the grid cathode part of the cat.

Last month we made a visit to Noel 3AUC at Merbein. By wa, I mean 3TI, 3SN, 3APP and 3GZ. Noel demonstrated his beam and managed to work a couple of DX stations just to prove that it worked. One thing the lads complained about was the lack of ash trays in Noel's shack. Really Noel, the floor is far too spic and span to accommodate the ashes and butts Chas, Max and Jim were depositing there. Guess we will bring a supply of ash trays next visit.

The Sunday afternoon hook-up works occasionally, but conditions or bows make us miss out on Frank 3FC in Cuylen. Bill 3AJU also seems to be in the skip most Sundays. No doubt Bill is in the middle of harvesting operations now and hasn't a great deal of time for Ham Radio. Harry 3MF tells me that he is

looking his gear over and has hopes of doing something in the near future. I gather the Junior op. keeps Harry busy these days. I hope that by the time next month comes around we will have some news of contacts on 2 mhz.

MOORABBIN & DIS. AMATEUR RADIO CLUB

At the meeting held at the Moorabbin Town Hall Annexe on Friday evening, 20th February, minutes of the annual club picnic and various hidden tx hunts, including the tx hunt at Ballarat, were shown by Bob Hall Film Productions. It was decided to inaugurate classes for members desiring study for the Amateur Operators Proficiency Certificate.

Honorary Member Certificates are still available to all transmitting Amateurs who contact members of the Moorabbin Radio Club "over the air" and who also QSO the club station, VK3AFC. The club station is in operation on the first and third Friday of each month.

GERLONO AMATEUR RADIO CLUB

Another novel tx hunt took place during February. Altogether four hunts took place at that meeting, each lasting for 30 minutes. The tx then went off for five minutes to shift location while the hunters returned to the club to start again. A point system was used which resulted in a win for Max 3DZ and Harry, while J Barber and company and J Beckingham tied for second place.

The second meeting of the month was a visit to the shack of Bob 3IC who had his gear arranged very neatly; it consisted of an FSA, BC348 and AR3 rx's, and a CRV5233 tx. During the evening, Bob had a contact with Peter 3APK. While this was going on, the boys were enjoying a buffet supper which was appreciated by the members.

QUEENSLAND

The February general meeting was very poorly attended mainly due to the rain, there being 11 full members and four students present. Being few as there were a vote was taken whether or not to call a meeting and it was decided to carry on. It was revealed that our meeting place (I.R.E. Rooms) is no longer available to us and in future, meetings will be held in the Royal Geographical Rooms in Ann Street, opposite the Couriers, and the general meeting will be on the first Friday of the month.

The Annual General Meeting is scheduled for 8th April and the Annual Dinner on 10th April, tickets 12/6 each. It is regretted that our Club Manager, who has no time to spare, is unable to carry on. He has done a splendid job for the students. However, 4LJ will take over until the end of the season when endeavours will be made to obtain a permanent instructor.

It was suggested by 4CC that permission be sought to allow QSOs in other languages than at present. English. 4AO voiced disapproval of portion of the Qd. Divisional Notes in a recent issue. 4VJ suggested a field day be held to revive interest in Divisional activities. That about sums up the February meeting.

Conditions generally have been extremely poor at this QTH. The last time my log was 34th January. Apart from a local or two and the story of the diving antenna, the panoramic view and the vertical, none of the locals seem really active. We have been subjected to frequent power black outs lately and this may have had a disquieting effect. We must expect poor conditions this year, being right down in the trough of the eleven-year cycle.

The March general meeting was held on Friday 6th in the pleasant new rooms as previously mentioned, there being 20 members present. An official invitation has been received for VK3AFC to attend the Uruqua Convention 4th to 6th April inclusive—where all are promised an excellent time.

4FE, as Federal representative, outlined with the aid of maps the latest approved plan for the Emergency Net which has been gone into very thoroughly and if carried out will be a mighty weapon of assistance in an emergency. Those with equipment are requested to get together and stow away same as much as possible. The Contest Committee advises that the annual VKA Intrastate Contest will take place from 1st to 30th April. One rule altered from last year is that consecutive QSOs between two stations on various bands is no longer permissible. Five (5) QSOs with other stations must be recorded in the interim.

At the suggestion of one of the Downs members, some trial broadcasts of the weekly Sunday 4WI session will be in full swing by the time the contest is in progress. The 7 Mc broadcasts have proved unsatisfactory in certain areas due to the existing poor conditions, so 4WI will radiate simultaneously on 2.5, 7 and 14 Mc. bands. It is hoped this will improve service to country members.



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Once again I was unable to purloin any gear. Ted depends on his booby traps to keep stray fishing hands off. I believe it is not that he is afraid of them, but that he knows they will catch any fish, even use a plastic water bottle to fool the fish. No lies on Ted, he uses them for bait.

Congratulations to Walley ARU on new harmonica. I hope you can play "The Fisherman's Song" or "The Fisherman's Blues".

Edgar 40F heard the other night on a fog, talking across town because no DX. Ted, twirled up a few more of those "The Fisherman's Blues".

Quite a number of Amateurs live in this area but their call signs are never heard. How about it chaps, the wet season has almost passed. It is time to get out and fish. I will chew the rag, even if not DX minded, we would appreciate your appearance. It may get back some interest in the local radio club. Those old

SOUTH AUSTRALIA

Jack 20Y paid a visit to the City of Churches (WKS) scribe please note) and naturally came up to see the "best broadcasting . . ." and met one of the highly trained and technical "beefins" employed by this excellent station. I was very pleased to meet him, and also his XYL, and we all got together on his last day

It is with regret that I write of the death of Laurie Phyllis (nee-SLP). Although he was not active at the time of his passing, he was pre-
 very active on 20 m. He was for many
 years a member of the club and was pro-
 posed to be an innumerate complaint and the
 local boys installed a station at his bedside
 from which he operated at all times of the
 day and night, and to which he ascribed his
 well known radio and electrical firm at the
 time of his death, Laurie was at all times a
 booster for Amateur Radio and was always
 ready to pass on to the boys any information
 they might require. We all extend to his wife
 with the trade. We all extend to his wife and
 family our sincere sympathy in their sad loss.

WEST COAST AREAS

3LT has also lost a h.t. tranny, and as his beam is still lying on the ground exactly as it fell, minus the telephone wires I hope, Pat has also decided to take advantage of the lull in proceedings to re-build a new rig, small and compact, but efficient. I had the pleasure of meeting your son-in-law, Pat, I tried to pump him for some scandal for this column, but he was too shrewd for me.

Visitors to Port Lincoln have included Lionel SGO and Laurie SKN. Unfortunately nobody could locate any DX to offer these city dwellers but wait till next time!

SOUTH EAST AREAS

SM5 is spring again, the reason being that the steel has arrived and a new 60 ft. tower is under construction. Stuart has been hearing on 40 mxx quite often and occasionally on 2 mxx. I have been listening to the QSL silent worker in the South East, but the boys have not quite given up hope of hearing signals from John yet. SCJ has been rather busy in his spare time and has been unable to get into the Communications Unit, but aside for a few skeds on 40 and 2 mxx, Col has little to report. I am told that he has at last convinced the boys that his 2 mxx beam really does work. Thanks again for the notes, Col, and regards to the family.

UPPER MURRAY AREAS

BBC has been very busy with the teeny weeny BC station that he keeps a rather eye on and therefore has been almost QRT. Having trouble with the catwhisker Hughes? BMA has wrecked his gear ready for a re-build. Fred gave me quite a shock this month, his notes were in my hands a full fortnight ahead. He can't keep it up, he can't keep it up. Many thanks Fred. I can't tell you how welcome they are.

probably be a married man by the time these photos were taken. He had all intended to marry and his XYL (to be) our best wish. Once again must give my usual advice to the young, they must be married. Ron Kemp was newly married, "DX before Diahs". Ron Kemp was a member of the Adm. Assoc. and he will probably be an associate member before long. Welcome OM, you couldn't do a better job.

The Upper Murray meeting of the local boys' section for February was held at the QTIL of Tom and IYL and although it was only a small attendance, it was a very enjoyable and interesting evening. Tom demonstrated his bits and pieces, including his KAISFA rx, which proved very sensitive. The boys were very interested in the squeaking and the pots and pans rattling in the kitchen. Many and varied were the subjects discussed, but the final honours for the evening went to Mrs. M. who was the first item of the night, to say, a tasty and appetising supper to which the boys did more than justice. The meeting was held at the QTIL of Tom and IYL held in March, has been postponed until April due to local reasons, fruit harvesting and holidays. But it is expected that will be held at the QTIL of Tom and IYL.

In the lives of most reporters there comes once in their life what is known as "The Big Break." For me, it came in the form of a bourne is to have a visit from a notable VKS citizen, and so far nobody knows who it is only me. Unfortunately I am not allowed to tell you his name, but he is traveling incognito—well anyway he is traveling in secret. However, if you should be at the Magazine's office on Monday, April 10, or the 9th of April, and can fight your way through the masked bands, members of Federal Executive armed with Tommy guns, the Magazine's armory, and the police, and get to the editor's office, you will find him sitting at his desk, and the dear Editor with an outside in red pencils and a larger than usual waistline. He will be dressed in a dark suit, and under the second class carriage, a debonaire, handsome, and athletic citizen from the City of Churches (VKS scribble please note). I regret that I cannot tell you his name, but I can tell you that he has sworn me to secrecy, but that a scoop for me, the only scribble to release the news. I will tell you that "First with the news, Persons," they call me.

Owing to the fact that I will be taking my well deserved annual vacation in April, the notes for the following issue will be written as usual by my arch enemy, Doc SMD. Give him a go fellows, but don't believe all he says, he suffers from an overdose of imagination at times and no good journalist suffers from that ailment. Incidentally, dear reader, this is a terrible padder, fairly makes me shudder at the thought, it does. Will be seeing you, if I survive the gunmen.

WESTERN AUSTRALIA

The drought has broken in the news line in WA, but methinks it has broken too late—and as usual, the blame is heaped on the weather. "old faithful" only. Manjupim activity is at an all-time low. Also reports. He and Mac have deserted the DX scene. He and Mac reason. Mac apparently QRL with the local bc. sets. GEM has taken up abode in a local "kiter-upper" and given up DX. Dependent on Struth. thought once people got Government jobs they never foresaw "Al" sorry to hear the KVL was sick at the time. "Al" hoped the good lady was OK now and that the fish bit well during the holiday you spoke of.

EPL is another to report "nothing doing," and new shack and by the time these notes appear may have the power on. He says that as soon as the DX begins pecking its head up, he will be back. Bill has vacationed a week-end in Geraldton and he and your scribe nattered furiously on Ham Radio for the entire week-end. Bill has since written me short note to say he returned safely to Forrest per camel train or mule team or something and will be active again.

WV is active occasionally with a low-power but reliable and surprisingly solid signal. FCN has made an appearance now and then too and has a cobber in Kellerberrin by name of Arnold Bruce. Arnold is a radio factory who's nuts about tv. and was at Cyril's shack recently when a QSO resulted with SEC. The 40 mc. band is a little better than the 30 mc. band, blanking pulses and sturdier hinged lingo. SAV and SAG were strangers who popped up on 7 Mc. during recent weeks to surprise their inhabitants.

A recent "whings" of mine to the Perth headquarters of this Division that these notes were starving for lack of information from members brought forth some rather peculiar logic. Country members who, like myself, do not get the opportunity of mingling with the bunch of Londoners at the monthly meetings, will be interested to learn that members expressed the view that the notes were a little out of the time zone. I am sure because of the time lag. Of course VKO is the only Division required to get its notes to the Editor by the 15th of the month. However, if the notes are of no interest they are not worth reading; if they are not worth reading, they are not worth reading.

From 6AC we learned the following: The highlight of the month was the annual picnic held on 22nd February last at Rockingham. It was nearly a full day affair and almost fifty persons were underfoot. The committee decided to forgo any radio stunts or contests, although the nearest approach was a quiz that was held and consisted of questions on a subject. It was a novel experience for so many old and new Hams to get together with no visible signs of radio equipment. The groups of heads together for fairly long periods while families waited patiently for lunch or a swim-typified family. At previous picnics some cars arrived loaded to the brim with equipment, a "wireless" radio picnic was to give the wives and families all our attention. Top marks go to GEM, GBL, GAZ and EDJ, who did the actual work. The outing was voted a distinct success.

The February general meeting, after the conclusion of business, was entertained with a working demonstration of an automatic radio computer with a slide rule. The speaker, SAG, and the description mainly by block diagrams was given by Mr. H. Gaubert. He did not make the point, since the computer when the equipment was installed on a plane. The audience moved a hearty vote of thanks to the lecturer and demonstrated the R.D. Trophy in a city shop window during March, accompanied by items of interest from various members.

It is a pity that full space of a leading store for a week, and no opportunity will be lost in bringing before the public what Ham Radio is all about. All our members and visitors will also be gathered together. The Radio Society of Western Australia is co-operating.

VKE, with its comparatively small group of all affairs to less than 50. GIC and GEM have gone to reside on Cocos Island. Their calls are VKIC and VKIHM, the latter is a regular worker on 14 Mc. and contemplates setting up his 144 Mc. gear.

Night activity has been almost nil for the 7 and 14 Mc. bands for the past month, and most of the time made with the 30 Mc. band.

6WI continues to radiate Institute news in the capable hands of 6QH. His selection of items for the monthly technical talk is always a valuable one and much appreciated.

TASMANIA

The most important happening for this month was of course the Annual General Meeting which was held on Saturday, 24th February, at the Photographic Society Rooms with 26 members present. The Northern Zone was represented by Leo TBY and Co. and Associate Bob Wilson, with a smile as wide as a quarter wave on 2 m and bursting with the news that the 144 Mc. band had opened to VLF for several months previously, resulting in a number of QSOs from the home locations. Congrats fellows, 1 a.m. to 2 p.m. hit from the N.W. Zone came in TKB (with two other VLFs) and Associate Bob Wilson. The meeting opened at 1745 hours and after the usual preliminaries, the following officers were elected for the coming year:

Patron, L. Crooks, TBY; QSL Officers, T. Allen, 7AL, and R. Calvert, TRT; Broadcast Officer, T. Allen; Traffic Officer, R. O'May, TMT; The acting secretary, R. O'May, TMT; Treasurer, J. G. and A. Finch, TCI; Stuck—T.M. Publicity Officer, L. Edwards, TLE (my apologies, Tny); J. Edwards, TAJ. Two new faces, TBJ and TKT will appear on the Council for the coming year, the ballot resulting thus: TBM, T72, TAP, 7AL, TKT, TBJ, and TLE. The President, the President's and Treasurer's reports showed that the Division had quite a successful year with the bank balance in a good condition and membership on the increase.

The meeting closed at approx. 7 p.m. and those present adjourned to Ellerslie House for the Annual Dinner of 26 members and guests were present, the Wines were represented by the Superintendent, Mr. F. Ruane, and the professional radio men by T. Walsh, O.I.C. of A. 6000, and T. Walsh by all—in some cases two good feeds—perhaps that was the reason for the gigantic "hiccup" from one of VKB's bandits. The President of the speeches—before the bung was out too!

A highlight of the occasion was the presentation by the President of special life membership certificates and a certificate for "Snowy" TCH was held for another year, owing to his absence.

We have been very fortunate in procuring a large room in the city for Institute club rooms—the room is very centrally situated in Liverpool Street and is quite large—50 ft. by 100 ft. The room is well equipped with rooms with plenty of space for equipment and workshop and shack at one end, but the success of the venture depends mainly on the support of the members. The room is working bees will be organized from time to time to get the place in order, etc., so don't be backward in helping out. The room and please don't leave it to the few Council members to do all the work.

Tiny TJD, who has been doing such a good job with the "Ham" magazine during the past year, has moved location to the QSA at Glenorchy. He tells me that he will be off the air for at least 12 months—ha, ha, 1 wonder already he has been on the air for 12 months. Bob YAP also moving into the QRN at Battery Point and disposing of the tower and aerial, but he is not sure if he has. He hasn't heard you for some time anyway. Bob.

Latest additions to Ham families this month are a daughter to Max TML and a son to Bert TBC. Several of the boys are in hospital beds and didn't know until the respective fathers happened to be in phase during visiting hours.

How this time, Bill 7AK went mountaineering a while back and barked his shin on a quartz crystal big as a football. It weighed about 28 lb. according to rumour and 160 lb. according to fact. The fellow, a s.s.c. rig Bill, it's about time we heard some sort of sound from Flinders Island. Chas, ex-7AN, has returned to Hobart and will be looking for 14 Mc. VK7 contacts from Port Moresby when he returns in April. Chas has a reputation for being a trouble maker supporting one end of the bit of wire—says it works all right too except that the bloke next door changes over relays, 31" Spkr., 8v. and 12v. Vibrator Supplies, Power Transformers. Ring UY 6256. K. McTaggart, 4 Kenilworth Gr., Glen Iris, S.E.8, Vic.

NORTHERN TASMANIAN ZONE
The great news in February was the 144 Mc. break through between Tasmania and Victoria. VKB, TLE, TBY, T72 and TGM being the successful ones.

As this is written just before the annual zone meeting, the results of the closely contested election for office-bearers are not known but the fight for the new year has been a hot one.

By the way, a very interesting lecture is on the books for April. Mr. T. K. Jebb has kindly consented to tell us about his recent trip to Britain and the Continent and should be of

absorbing interest to all members. It is the second Friday in April at the Technical College.

Like the following month, TKW has promised to unveil some of the mysteries of remote control as applied to h.c. station working. If any member has any ideas or further lectures, speak up and the committee know.

We always knew that in recent months radio communications with the south were bad, so Mr. Robert, suggesting that some of the stations appear to be back looking into. Wouldn't it be terrible if the lads worked some signals between Mt. Barrow and Mt. Wellington, and 144 Mc. closed up between these points.

HAMADS

9d. per line, minimum 2/-.

Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 8th of the month, and remittance must accompany advertisement. Calculation is on their own basis, on an average of six words a line. Dealers' advertisements not accepted in this column.

FOR SALE—MN26C Receiver: NL, B.F.O., "S" Meter, pwr. supply, 230 A.C., 112 Kc. I.F.s, range 150 Kc. to 1500 Kc., two R.F. stages, excellent Q5'er. £25 or best offer. Roper, 9 Empire St., Preston, Vic. JU 2921.

FOR SALE—1 SCR522 Tx and Rx complete, 2 Command Transmitters, 7 Mc., 1 R.C.A. AR7 Receiver, 540 Kc. to 31 Mc., 10 tubes, 1 Hammarlund Super Pro Receiver, 19 tubes; 1 Eddystone 50 Mc. Transmitter, 5 stages final 815; 1 Eddystone 50 Mc. Converter in cabinet, not complete; 1 A.W.A. Modulated Oscillator, Type J6726; 1 AR301 144 Mc. Receiver; 1 AT5 Transmitter, converted for 6 volt filament operation, 1 TA12B Transmitter, converted except for finals. R. Pike, Castlemeagh Street, Coonamble, N.S.W.

SELL—All my gear. Must clear owing to new small QRA. This is dinkum—gear at give-away prices. Offer basis until 3 p.m. Auction following Easter Sunday—all day. H. Kinneer, Cr. Barnard and Yar-Orrong Rds., Toorak (off Toorak Rd.). Phone UY 6090.

SELL—Beam aerial tower with feeds for two beams, 28v. motor and reduction gears, £14/10/-. Also 40 lb. oregan mast and insulated guys, £3/10/-. Must sell. H. Webber, 567 Punt Road, South Yarra, Vic.

SELL—SCR522 rack and panel, partly converted, xtal. and meter. £17 or best offer. J. J. Gadsdell, 24 Cumming Street, West Brunswick, Vic.

SELL—See advt. March issue of "A.R." Some items remain: 829B, 834, 5U4 and other tubes, Tx Tuning Conds., Eddystone S640 Rx, some Meters, 1,100 volt Trans., etc. No reasonable offer refused to clear gear. Also A.C. operated 300 chm. and 750 chm. co-axial charge-over relays, 31" Spkr., 8v. and 12v. Vibrator Supplies, Power Transformers. Ring UY 6256. K. McTaggart, 4 Kenilworth Gr., Glen Iris, S.E.8, Vic.

SELL—Standard 5 v. Rack, £1; complete Var. Pitch 12v. Prop. Motor and two 50v. Selsyn Motors, £7/10/-; ASB7 RELF, 515 Mc. Receiver, comp. with 146B Lighter wave, B.F. Amp. and all other valves unmodified. £12. TR1143 V.H.F. Tx-Rx, 100-124 Mc. 20 valves. £10. E. Manifold, 287 Jasper Road, McKinnon, S.E.14, Vic.

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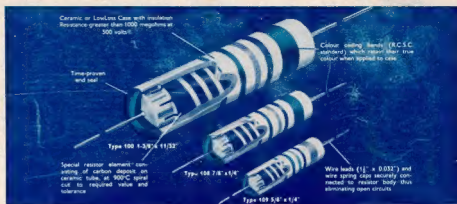
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COLOUR CODE

In the standardised system of colour coding the colours are read from the end of the resistor adjacent to the colour bands. The third colour always indicates the number of "noughts" following the first two numerals. The colour code is as follows:—

Black	0	Green	5
Brown	1	Blue	6
Red	2	Violet	7
Orange	3	Grey	8
Yellow	4	White	9

If a fourth band is added on resistors, it indicates the tolerance according to the following code:—

Gold, $\pm 5\%$ tolerance;
Silver, $\pm 10\%$ tolerance.

If the fourth metallic indication is absent, the tolerance is assumed to be 20%.

Examples:

1. Red, Violet, Orange, Silver—27,000 ohms $\pm 10\%$.
2. Yellow, Violet, Black, Gold—47 ohms $\pm 5\%$.
3. Blue, Grey, Brown—880 ohms $\pm 20\%$.

INTERNATIONAL PREFERRED VALUES (10% Tolerance)

The following table lists the standard resistor values in ohms, comprising the 10% Tolerance Range. Each resistor covers values within $\pm 10\%$ of its nominal value.

Pref. V.	Res. Range	Pref. Val.	Res. Range	Pref. Value	Res. Range	Pref. Value	Res. Range
10	— 10 — 11	330	— 297 — 363	10,000	— 9,000 — 11,000	330,000	— 297,000 — 363,000
12	— 11 — 13	390	— 351 — 429	12,000	— 10,800 — 13,200	390,000	— 351,000 — 429,000
15	— 14 — 16	470	— 423 — 517	15,000	— 13,500 — 16,500	470,000	— 423,000 — 517,000
18	— 17 — 19	560	— 504 — 616	18,000	— 16,200 — 19,800	560,000	— 504,000 — 616,000
22	— 20 — 24	680	— 612 — 748	22,000	— 19,800 — 24,200	680,000	— 612,000 — 748,000
27	— 25 — 30	820	— 738 — 902	27,000	— 24,300 — 29,700	820,000	— 738,000 — 902,000
33	— 30 — 36	1,000	— 900 — 1,100	33,000	— 29,700 — 36,300	1.0 meg.	— 0.9 — 1.1 meg.
39	— 36 — 42	1,200	— 1,080 — 1,320	39,000	— 35,100 — 42,900	1.2 meg.	— 1.08 — 1.32 meg.
47	— 43 — 51	1,500	— 1,350 — 1,650	47,000	— 42,300 — 51,700	1.5 meg.	— 1.35 — 1.65 meg.
56	— 52 — 61	1,800	— 1,620 — 1,980	56,000	— 50,400 — 61,600	1.8 meg.	— 1.62 — 1.98 meg.
68	— 62 — 74	2,200	— 1,980 — 2,420	68,000	— 61,200 — 74,800	2.2 meg.	— 1.98 — 2.42 meg.
82	— 74 — 90	2,700	— 2,430 — 2,970	82,000	— 73,800 — 90,200	2.7 meg.	— 2.43 — 2.97 meg.
100	— 90 — 110	3,300	— 2,970 — 3,630	100,000	— 90,000 — 110,000	3.3 meg.	— 2.97 — 3.63 meg.
120	— 108 — 132	3,900	— 3,510 — 4,290	120,000	— 108,000 — 132,000	3.9 meg.	— 3.51 — 4.29 meg.
150	— 135 — 165	4,700	— 4,230 — 5,170	150,000	— 135,000 — 165,000	4.7 meg.	— 4.23 — 5.17 meg.
180	— 162 — 198	5,600	— 5,040 — 6,160	180,000	— 162,000 — 198,000	5.6 meg.	— 5.04 — 6.16 meg.
220	— 198 — 242	6,800	— 6,120 — 7,480	220,000	— 198,000 — 242,000	6.8 meg.	— 6.12 — 7.48 meg.
270	— 243 — 297	8,200	— 7,380 — 9,020	270,000	— 243,000 — 297,000	8.2 meg.	— 7.38 — 9.02 meg.

INTERNATIONAL PREFERRED VALUES (20% Tolerance)

Pref. V.	Res. Range	Pref. Val.	Res. Range	Pref. Value	Res. Range	Pref. Value	Res. Range
10	— 10 — 12	330	— 284 — 396	10,000	— 8,000 — 12,000	470,000	— 378,000 — 564,000
15	— 12 — 18	470	— 378 — 564	15,000	— 12,000 — 18,000	680,000	— 544,000 — 816,000
22	— 18 — 28	680	— 544 — 820	22,000	— 17,000 — 26,400	1.0 meg.	— 0.80 — 1.20 meg.
33	— 27 — 39	1,000	— 800 — 1,200	33,000	— 26,400 — 39,600	1.5 meg.	— 1.20 — 1.80 meg.
47	— 38 — 56	1,500	— 1,200 — 1,800	47,000	— 37,800 — 56,400	2.2 meg.	— 1.76 — 2.64 meg.
68	— 55 — 81	2,200	— 1,760 — 2,640	68,000	— 54,400 — 81,600	3.3 meg.	— 2.64 — 3.96 meg.
100	— 80 — 120	3,300	— 2,640 — 3,960	100,000	— 80,000 — 120,000	4.7 meg.	— 3.76 — 5.64 meg.
150	— 120 — 180	4,700	— 3,760 — 5,640	150,000	— 120,000 — 180,000	6.8 meg.	— 5.44 — 8.16 meg.
220	— 176 — 264	6,800	— 5,440 — 8,160	220,000	— 176,000 — 264,000	10.0 meg.	— 8.00 — 10.0 meg.
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